

SUPERSEDES ALL PREVIOUS PRICE LISTS.

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VALLEY PUMP CO.  
STEAM AND POWER  
PUMPS.

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EASTHAMPTON, MASS., U. S. A.

## PUMPS WE MANUFACTURE.

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BOILER FEED PUMPS,

LOW PRESSURE PUMPS,

BREWERY PUMPS,

FIRE PUMPS,

ELEVATOR PUMPS,

COMBINED BOILERS & PUMPS,

MINING PUMPS,

TANK PUMPS,

TANNERY PUMPS,

QUARRY PUMPS,

CIRCULATING PUMPS,

SUGAR HOUSE PUMPS,

CREAMERY ENGINE & PUMP,  
(COMBINED)

WATER WORK PUMP,

ACID PUMPS,  
(ALL COMPOSITION)

AMMONIA PUMPS,

ICE MANUFACTURING PUMPS,

DISTILLERY PUMPS,

COMBINED PUMPS & HEATERS

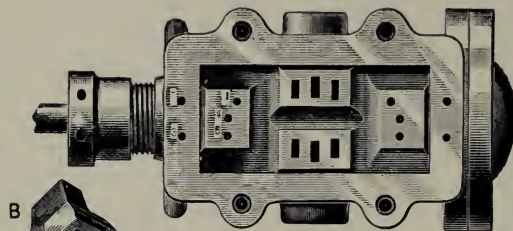
POWER PUMPS,

## DESCRIPTIVE CATALOGUE

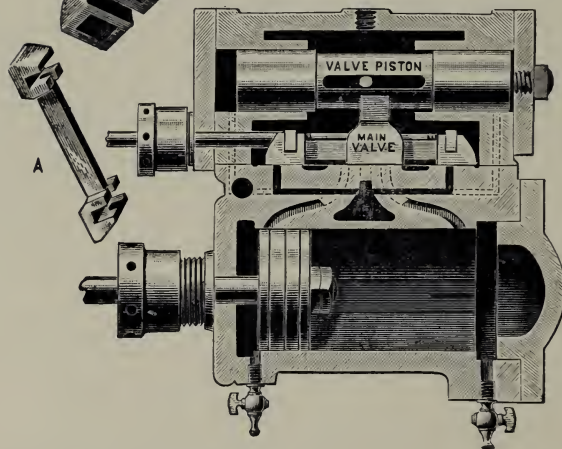
Of Pumping Machinery made by the VALLEY PUMP COMPANY, at their works, Easthampton, Massachusetts, and sold by dealers in all parts of the United States and Canada.

These Pumps took First Premium at American Institute Fair, in New York, in 1870 and 1871; also at Massachusetts Charitable Mechanics' Association Fair, Boston, 1874; and at the Centennial, Philadelphia, in 1876; Southern Exposition, Louisville, 1884; and at every other exhibition wherever shown.

Main Valve.



Auxiliary Valve.

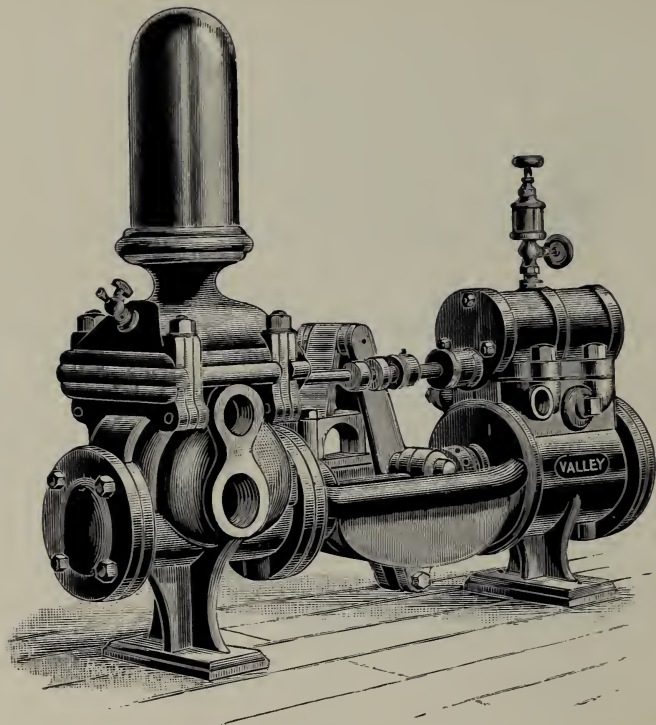


SECTIONAL VIEW OF STEAM CYLINDER, STEAM VALVES, ETC. VALLEY STEAM PUMP.

## VALLEY STEAM PUMP.

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The Steam Valve motion to *direct acting Steam Pumps*, has always been the greatest source of annoyance to the purchaser. This Pump has a very simple and POSITIVE arrangement. The main valve is a plain SLIDE VALVE of the D or B pattern, cast with a groove through its face, and is moved by an independent piston working in a small cylinder above the main cylinder. The auxiliary valve which controls the steam to the VALVE PISTON, is made with TWO FLAT faces far enough apart to allow the main valve to work between them. These faces are connected together by a web which fits into the groove in the face of the MAIN VALVE, and both work on the same plane.



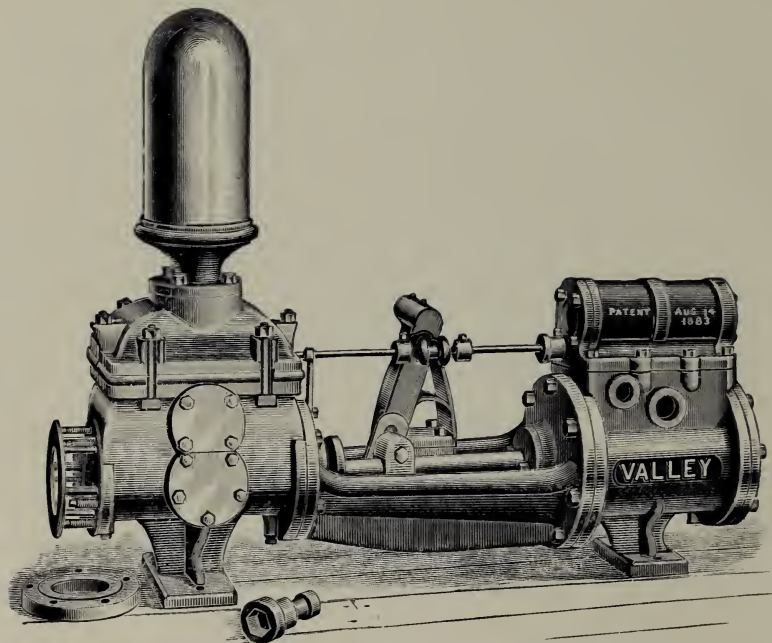
VALLEY PUMP No. 3.  $5\frac{1}{4} \times 3\frac{1}{2} \times 6$ .

# VALLEY PUMPS. REGULAR PATTERN.

Number.	Diameter Steam Cylinder in Inches.	Diameter of Water Cyl. in Inches.	Length of Stroke in Inches.	Strokes per minute for heavy pr's and continuous work.	Cap. in gallons at this speed.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction Pipe.	Size of Discharge Pipe.	PRICES.
0	3	1 $\frac{3}{4}$	4	100 Str.	4	$\frac{1}{2}$	$\frac{3}{4}$	1	$\frac{3}{4}$	\$50 00
1	3 $\frac{1}{2}$	2	4	100	5	$\frac{1}{2}$	$\frac{3}{4}$	1	$\frac{3}{4}$	65 00
1 $\frac{1}{2}$	3 $\frac{1}{2}$	2 $\frac{1}{4}$	5	90	8	$\frac{1}{2}$	$\frac{3}{4}$	1 $\frac{1}{4}$	1	95 00
2	4	2 $\frac{1}{2}$	5	90	10	$\frac{1}{2}$	$\frac{3}{4}$	1 $\frac{1}{4}$	1	105 00
3	5 $\frac{1}{4}$	3 $\frac{1}{2}$	6	85	21	$\frac{3}{4}$	1	2	1 $\frac{1}{2}$	145 00
4	5 $\frac{3}{4}$	3 $\frac{3}{4}$	8	80	30	$\frac{3}{4}$	1	2 $\frac{1}{2}$	2	175 00
4 $\frac{1}{2}$	6	4	8	80	34	$\frac{3}{4}$	1	2 $\frac{1}{2}$	2	200 00
5	7	4 $\frac{1}{2}$	10	75	51	1	1 $\frac{1}{2}$	3	2 $\frac{1}{2}$	275 00
7	10	6	12	90	87	1 $\frac{1}{2}$	2	4	3	400 00
9	14	8	12	90	150	2	2 $\frac{1}{2}$	5	3 $\frac{1}{2}$	550 00

As Boiler feeding is usually heavy CONTINUOUS work, we recommend a size LARGE enough to keep up the supply of water in the Boiler when the Pump is run slowly. This avoids the concussion and jar of the pipes and connections which is always noticeable when Pumps are run fast on this work. For feeding HOT WATER, set the Pump BELOW the supply, so the water will FLOW into it, as HOT WATER cannot be lifted by suction.

Allow 7 $\frac{1}{2}$  gallons per hour for each horse power.



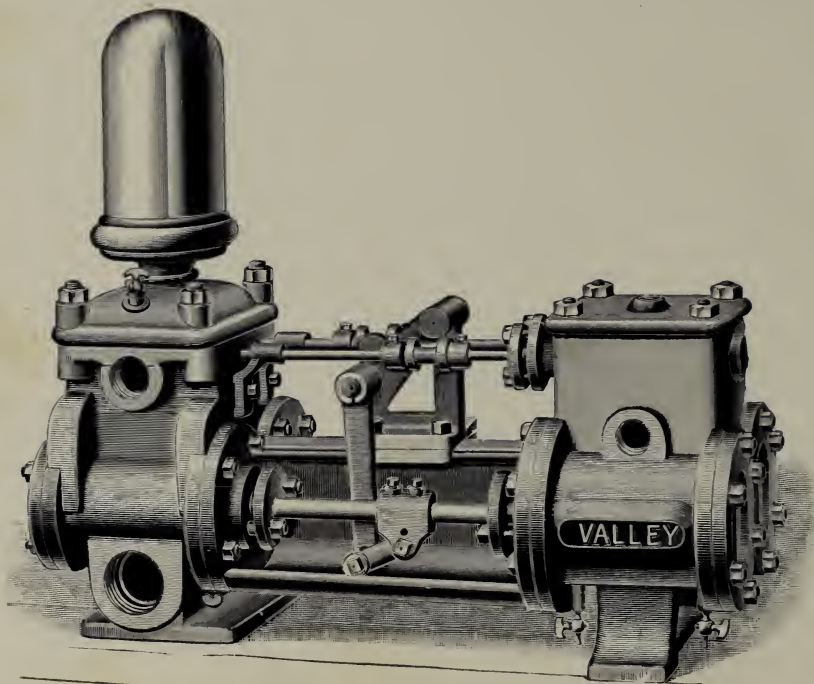


# VALLEY PUMPS,

WITH REMOVABLE COMPOSITION LININGS.

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These are excellent Pumps for Railway Stations or other places where the water is gritty, as a lining can be turned around as it wears away on the bottom, and when entirely worn out a new one can be inserted in a few moments, and with our Improved Water Piston, the Pump will be in as good working order as when first set up. The extra expense of the linings is small.



$5\frac{1}{4} \times 3\frac{1}{2} \times 5$ . IMPROVED DUPLEX STEAM PUMP.

# PRICE LIST

## Valley Duplex Steam Pumps

OF IMPROVED PATTERN MADE FOR HIGH  
PRESSURE SERVICE.

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3	x	2	x	3	-	-	-	\$60.00
$4\frac{1}{2}$	x	$2\frac{3}{4}$	x	4	-	-	-	90.00
$5\frac{1}{4}$	x	$3\frac{1}{2}$	x	5	-	-	-	115.00
6	x	4	x	6	-	-	-	140.00
$7\frac{1}{2}$	x	5	x	6	-	-	-	225.00
$7\frac{1}{2}$	x	$4\frac{1}{2}$	x	10	-	-	-	330.00
$7\frac{1}{2}$	x	$5\frac{1}{4}$	x	10	-	-	-	355.00
9	x	$5\frac{1}{4}$	x	10	-	-	-	370.00
9	x	6	x	10	-	-	-	395.00
10	x	6	x	10	-	-	-	410.00
10	x	7	x	10	-	-	-	470.00
12	x	7	x	12	-	-	-	530.00
14	x	7	x	12	-	-	-	570.00

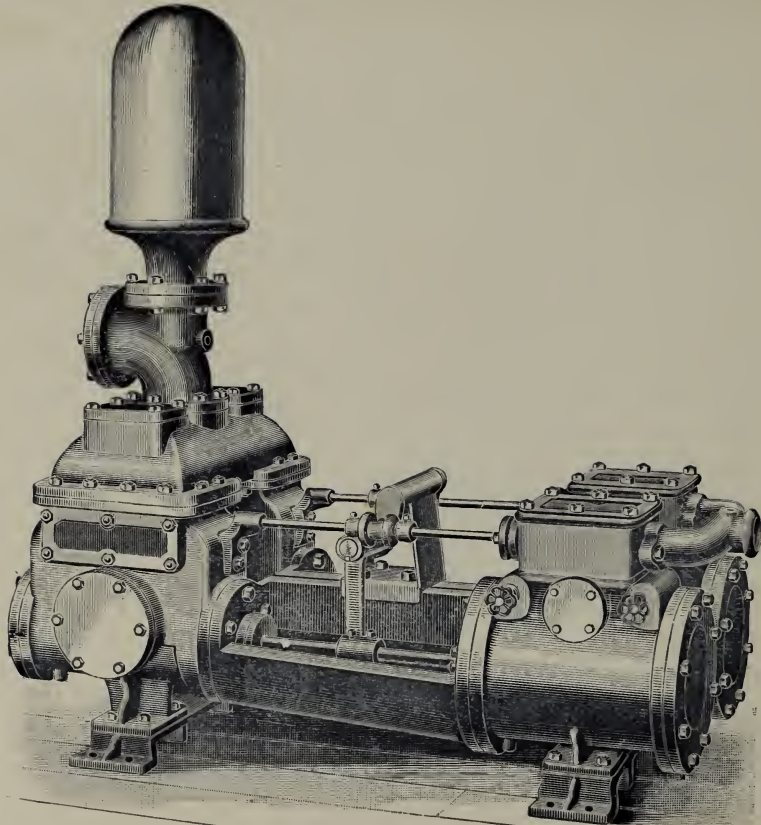


# IMPROVED DUPLEX STEAM PUMP.

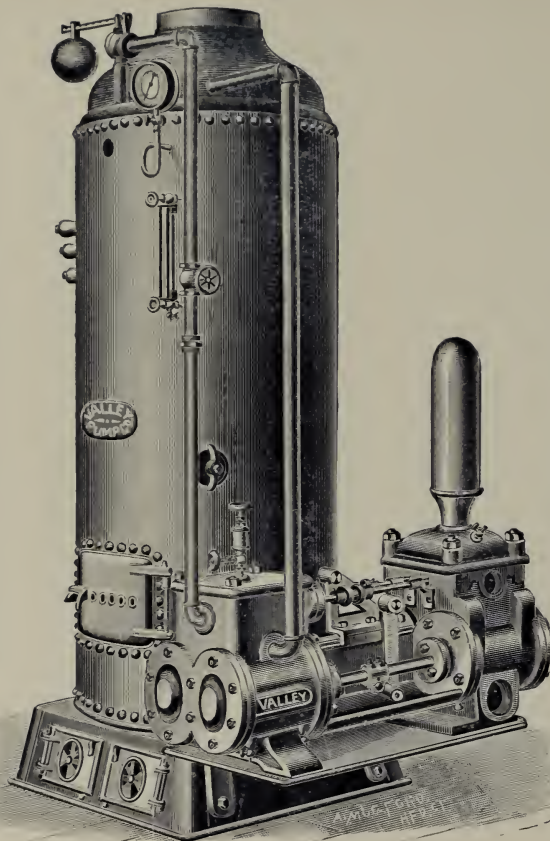
FOR FORCING AGAINST HEAVY PRESSURES.

Diameter Steam Cylinder in Inches.	Diameter of Plungers in Inches.	Length of Stroke in Inches.	Capacity in Gallons, One Stroke of One Plunger.	Proper Strokes per minute. One Plun- ger, varying with kind of work and pressure.	Gallons Delivered by both Plungers at stated number Strokes.	PRICES.	Size of Steam Pipe in Inches.	Size of Exhaust Pipe in Inches.	Size of Section Pipe in Inches.	Size of Discharge Pipe in Inches.
3	2	3	.04	100 to 250	8 to 20	\$11.00	$\frac{3}{8}$	$\frac{1}{2}$	1	$\frac{3}{4}$
4 $\frac{1}{2}$	2 $\frac{3}{4}$	4	.10	100 to 200	20 to 40	12.00	$\frac{1}{2}$	$\frac{3}{4}$	1 $\frac{1}{2}$	1
5 $\frac{1}{4}$	3 $\frac{1}{2}$	5	.20	100 to 200	40 to 80	15.00	$\frac{3}{4}$	1 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$
6	4	6	.33	100 to 150	70 to 100	17.00	1	1 $\frac{1}{2}$	2 $\frac{1}{2}$	2
7 $\frac{1}{2}$	4 $\frac{1}{2}$	10	.42	75 to 125	85 to 125	34.50	1 $\frac{1}{2}$	2	4	3
9	5 $\frac{1}{4}$	10	.98	75 to 125	135 to 250	39.50	2	2 $\frac{1}{2}$	4	3
10	6	10	1.22	75 to 125	180 to 300	43.00	2	2 $\frac{1}{2}$	5	4
12	7	12	1.99	75 to 125	285 to 478	55.00	2 $\frac{1}{2}$	3	6	5
14	7	12	1.99	75 to 125	285 to 478	61.00	2 $\frac{1}{2}$	3	6	5
14	8 $\frac{1}{2}$	12	2.99	75 to 125	425 to 711		2 $\frac{1}{2}$	3	6	6
16	8 $\frac{1}{2}$	12	2.99	75 to 125	425 to 711		2 $\frac{1}{2}$	3	6	6
16	10	12	4.08	75 to 125	600 to 900		2 $\frac{1}{2}$	3	8	6
18 $\frac{1}{2}$	8 $\frac{1}{2}$	12	2.99	75 to 125	425 to 711		3	3 $\frac{1}{2}$	6	6
18 $\frac{1}{2}$	10	12	4.08	75 to 125	600 to 900		3	3 $\frac{1}{2}$	8	6
18 $\frac{1}{2}$	12	12	5.87	75 to 125	850 to 1420		3	3 $\frac{1}{2}$	10	7
18 $\frac{1}{2}$	14	12	7.99	75 to 125	1150 to 1900		3	3 $\frac{1}{2}$	12	10

These Pumps are fitted up with steel rods and brass water plungers of our improved design.  
Water cylinders lined with brass at a small additional expense.







# Duplex Steam Pumps,

AND BOILERS.

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The illustration herewith represents our Pumps with Boiler complete. We mount either the Single or Duplex Pumps in this way, and the arrangement is very satisfactory to our customers. We also furnish any of our Fly Wheel Pumps and Boilers where this style of Pumps is preferred.

The attention of Rail Road and Hotel men is particularly called to the advantages of this arrangement of Pumps and Boilers.



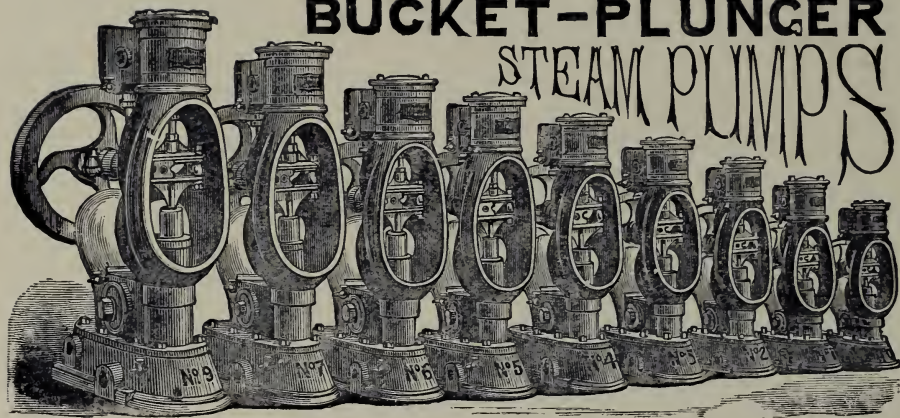
## DUPLEX PUMPS AND BOILERS.

Steam Cylinder.	Water Cylinder.	Stroke.	Gallons per Stroke, 1 Plunger.	Size of Suction Pipe.	Size of Discharge Pipe.	Size of Steam Pipe.	Size of Exhaust Pipe.	Height of Boiler.	Diameter of Boiler.	PRICES.
4½	2¾	4	.10	1½	1	½	¾	48	24	
5¼	3½	5	.20	2½	1½	¾	1¼	60	24	
6	4	6	.33	2½	2	1	1½	72	30	
7½	4½	10	.69	4	3	1½	2	72	30	
9	5¼	10	.93	5	4	1½	2	84	30	
10	6	10	1.22	5	4	2	2½	78	36	

## SINGLE PUMPS AND BOILERS.

4	2½	5	.11	1¼	1	½	¾	48	24	
5¼	3½	6	.25	2	1½	¾	1	60	24	
5¾	3¾	8	.38	2½	2	¾	1	72	24	
6	4	8	.43	2½	2	¾	1	72	24	
7	4½	10	.69	3	2½	1	1½	60	30	
10	6	12	1.46	4	3	1½	2	84	30	

# BUCKET-PLUNGER STEAM PUMPS



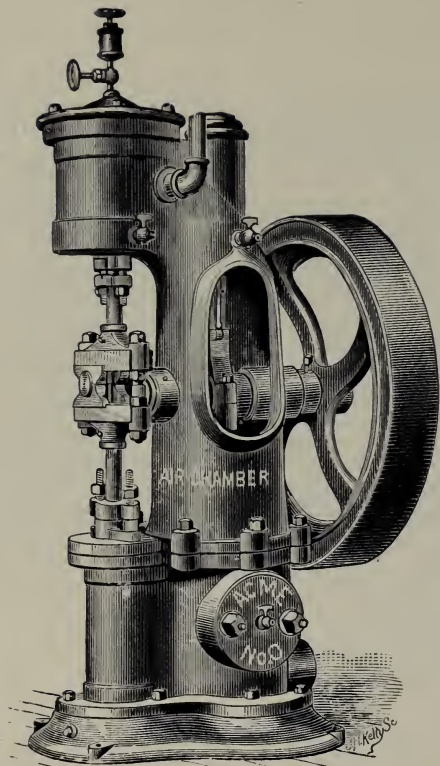
THIS CUT SHOWS THE NINE REGULAR SIZES WE ALWAYS CARRY IN STOCK,  
SUITABLE TO FEED FROM TEN HORSE POWER TO FIVE HUNDRED  
HORSE POWER STEAM BOILERS.

# BUCKET-PLUNGER PUMP AND STEAM ENGINE.

Number.	Diameter Steam Cylinder in Inches.	Diameter Water Plunger in Inches.	Displacement in gallons per Revolution.	Length of Floor Space required in feet and inches.	Height in feet and inches required to set a Pump.	Width of Space in feet and inches required for Pump.	Weight of Pump in pounds.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction Pipe.	Size of Discharge Pipe.	PRICES.
0	4	2 $\frac{1}{4}$	.04	1—3	2—3	1—4	175	$\frac{1}{8}$	$\frac{1}{8}$	1	$\frac{3}{4}$	\$ 85.00
1	5	2 $\frac{3}{4}$	.07	1—6	2—7	1—5	275	$\frac{1}{4}$	$\frac{1}{4}$	1 $\frac{1}{4}$	1	115.00
2	5 $\frac{1}{2}$	3 $\frac{1}{4}$	.10	1—10	2—10	1—7 $\frac{1}{2}$	350	$\frac{1}{2}$	$\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	160.00
3	7	4 $\frac{1}{4}$	.18	2—1	3—1	1—10	550	$\frac{3}{4}$	1	2	1 $\frac{1}{4}$	200.00
4	8	5 $\frac{1}{4}$	.38	2—5	3—11	2—3	900	1	1 $\frac{1}{4}$	3	2	250.00
5	10	6 $\frac{1}{2}$	.54	2—10	4—2	2—8	1200	1	1 $\frac{1}{4}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$	325.00
6	10	7	.91	2—10	5—2	2—8	1600	1 $\frac{1}{4}$	1 $\frac{1}{2}$	4	2 $\frac{1}{2}$	400.00
7	12	8	1.30	3—6	5—6	3	1900	2	2 $\frac{1}{2}$	5	3	500.00
9	14	10	2.04	4—6	5—8	3—4	2850	2 $\frac{1}{2}$	3	6	5	650.00

FOR FEEDING BOILERS, FILLING TANKS, OR FIRE PURPOSES, OR TO  
RUN AS A STEAM ENGINE TO FURNISH POWER.

This Pump is a general favorite wherever used. There are more of them in use than all other  
Fly Wheel Steam Pumps combined.



ACME  
STEAM PUMP.

# ACME PUMP AND STEAM ENGINE.

No.	Weight of Pump in Lbs.	Steam Cylinder.	Water Cylinder.	Gallons per Stroke.	Capacity of 100 Rev.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction Pipe.	Size of Discharge Pipe	PRICES.
0	150	3	1 $\frac{1}{2}$	.04	4 gal.	$\frac{3}{4}$	$\frac{1}{4}$	1	$\frac{3}{4}$	\$ 70 00
1	210	4	2 $\frac{1}{4}$	.07	7 "	$\frac{3}{4}$	$\frac{1}{4}$	1	$\frac{3}{4}$	95 00
2	328	5	2 $\frac{1}{2}$	.12	12 "	$\frac{3}{4}$	$\frac{3}{4}$	1 $\frac{1}{4}$	1	135 00
3	460	6	3	.20	20 "	$\frac{3}{4}$	$\frac{3}{4}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	170 00
4	750	7	3 $\frac{1}{2}$	.33	33 "	$\frac{3}{4}$	1	2	1 $\frac{1}{2}$	200 00
5	1050	8 $\frac{1}{2}$	4 $\frac{1}{4}$	.49	49 "	1	1 $\frac{1}{4}$	3	2	275 00
S-6	1060	8 $\frac{1}{2}$	4 $\frac{1}{2}$	.54	54 "	1	1 $\frac{1}{4}$	3	2	300 00
S-7	1075	8 $\frac{1}{2}$	5	.66	66 "	1	1 $\frac{1}{4}$	3	2	325 00

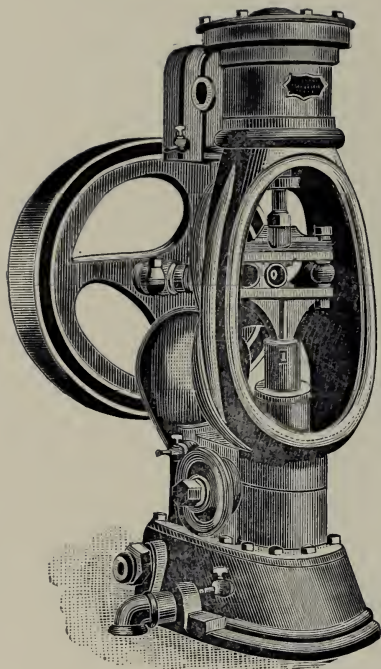
This Pump is different from the Bucket Plunger, as it has the regular four valve double acting piston water end, discharging the full contents of the water cylinder at each single stroke. It is well made and fully guaranteed, and the price is low for a first-class machine. This Pump can be used as an Engine to furnish power by removing the plugs in the base which allow the air to come in drip.

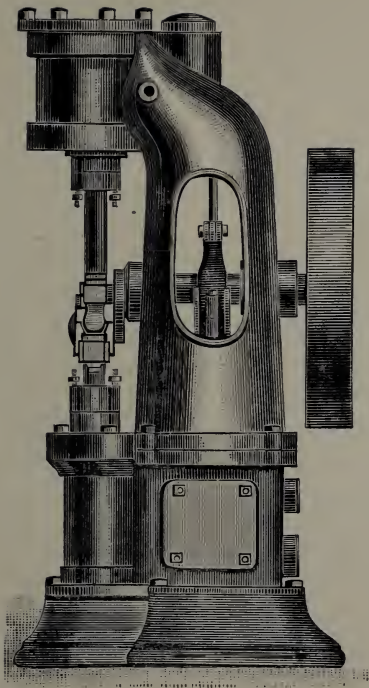
The highest speed is obtained by this Pump without the least jar or "water hammer."

## AMMONIAL LIQUID PUMPS.

Used in the manufacture of Ice and Refrigeratory Apparatus. These Pumps are made very heavy, being nearly fifty per cent. heavier than the regular boiler feed Pump, guaranteed to work smoothly under 300 lbs. pressure to square inch.

Number.	Diameter Steam Cylinder in Inches.	Diameter Water Plunger in Inches.	Displacement in gallons per Revolution.	Length of Floor Space required in feet and inches.	Height in feet and inches required to set a Pump.	Width of Space in feet and inches required for Pump.	PRICES.
2	5 $\frac{3}{4}$	2 $\frac{3}{4}$	.07	1—10	2—10	1—7 $\frac{1}{2}$	\$175 00
3	7	3 $\frac{3}{4}$	.16	2—1	3—1	1—10	225 00
4	8	4 $\frac{3}{4}$	.20	2—5	3—11	2—3	275 00
5	10	5 $\frac{3}{4}$	.44	1—10	4—2	2—8	350 00





## ALKALI SOLUTION PUMP.

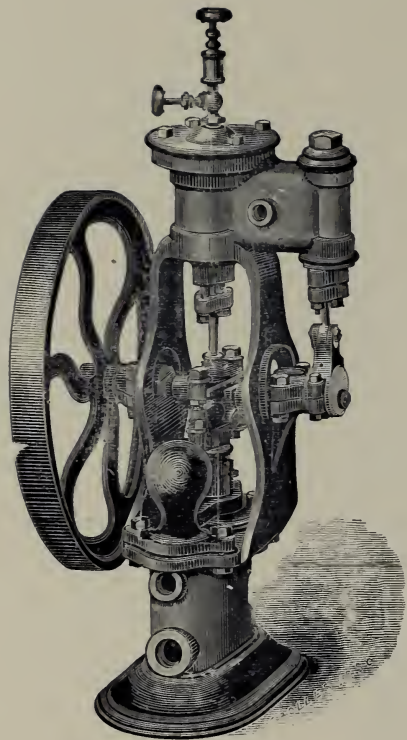
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These Pumps are designed for working Alkali solutions in Pulp and Paper Mills and are extensively used on "Yaryan" and similar evaporating apparatus.

They give the very best results in maintaining a vacuum on these machines.

We also build them of solid composition to stand *acid*.





A. B. C.  
BUCKET PLUNGER.

BEST LOW PRICED STEAM PUMP  
IN THE MARKET.



## A. B. C. Bucket Plunger Steam Pump and Engine.

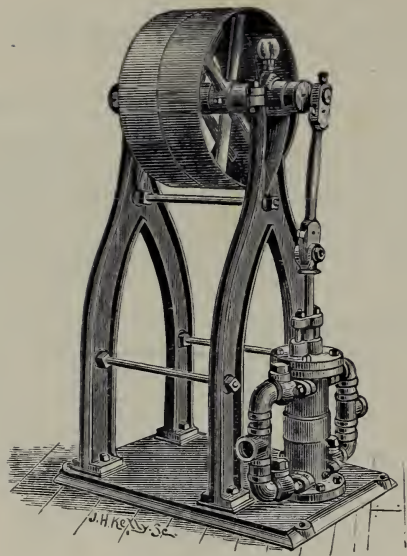
We claim for this Pump that it is the very best low priced Fly Wheel Steam Pump in the market at the present time. It is made on the same principle as our regular Bucket Plunger Pumps, and is protected to us by the patents we hold on that Pump, and is fully guaranteed to do the work we claim for it. For supplying small and medium sized Boilers, it invariably gives satisfaction.

This Pump can be used as an Engine, by removing the thumb-screw in bottom of water cylinder, to let in the air.

### PRICE LIST

	Diameter Steam Cylinder in Inches.	Diameter Water Cylinder in inches.	Stroke in Inches.	Revolutions per minute.	Gallons Discharged.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction Pipe.	Size of Discharge Pipe.	PRICES.
A	3	1 $\frac{3}{4}$	2	100	2.8	$\frac{3}{4}$	$\frac{1}{2}$	1	$\frac{3}{4}$	\$45 00
B	4	2 $\frac{3}{4}$	2 $\frac{1}{2}$	90	5.8	$\frac{3}{4}$	$\frac{1}{2}$	1 $\frac{1}{4}$	1	65 00
C	5	3	2 $\frac{1}{2}$	90	6.9	$\frac{3}{4}$	$\frac{3}{4}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	85 00

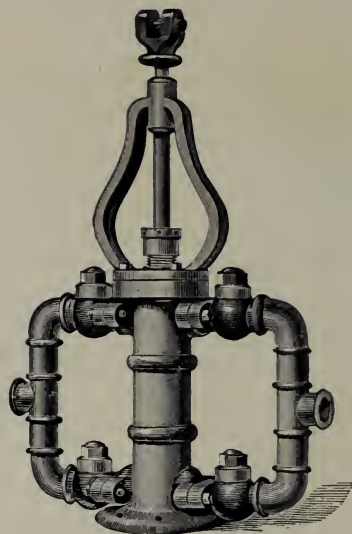
# DOUBLE ACTING POWER PUMPS.



MOUNTED PUMPS.

2 $\frac{3}{4}$  in. Water Cylinder, 5 in. stroke, \$100.00

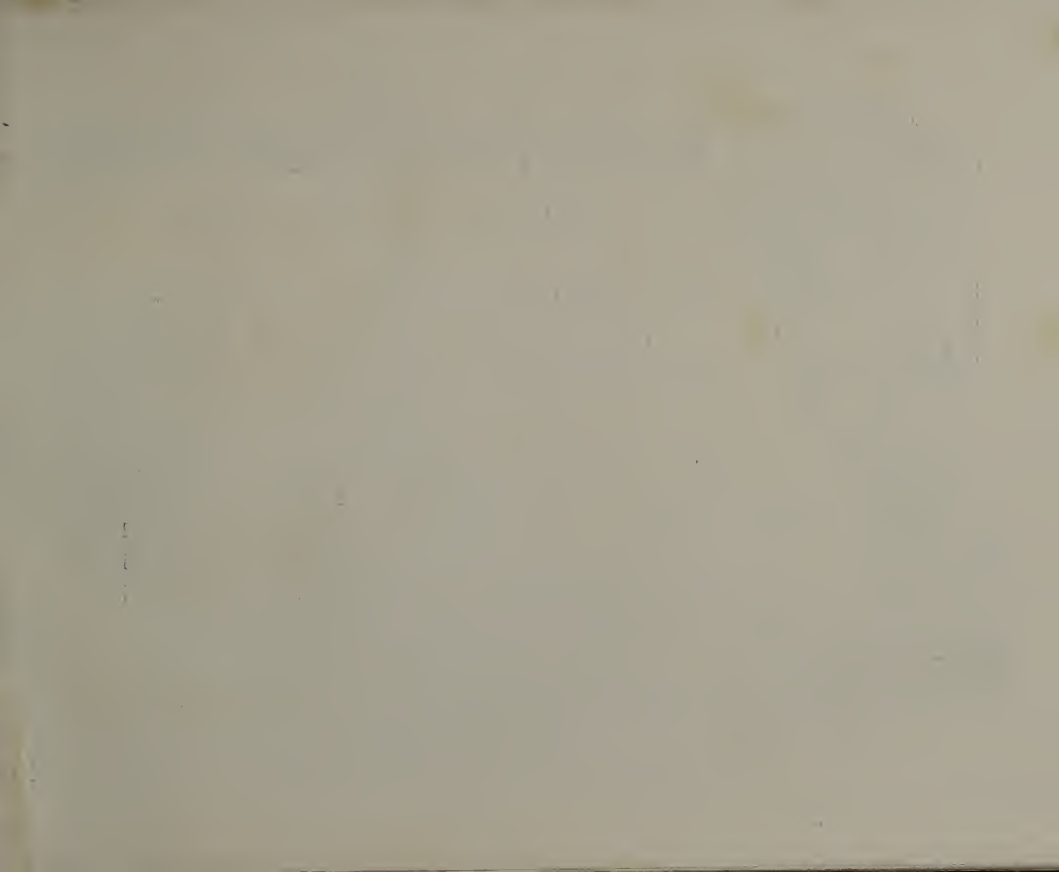
3 $\frac{1}{2}$  in. Water Cylinder, 5 in. stroke, 120.00



PUMPS NOT MOUNTED.

2 $\frac{3}{4}$  in. Water Cylinder 10 in. stroke, \$50.00

3 $\frac{1}{2}$  in. Water Cylinder, 10 in. stroke, 60.00



# Double Acting Power Pumps

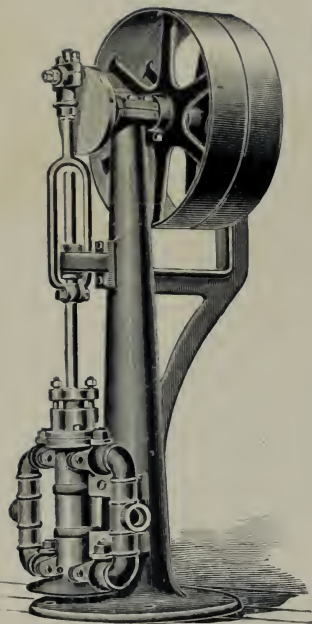
WITH ADJUSTABLE STROKE.

FOR FEEDING BOILERS OR FORCING WATER OR OTHER LIQUIDS AGAINST PRESSURE FOR ANY PURPOSE.

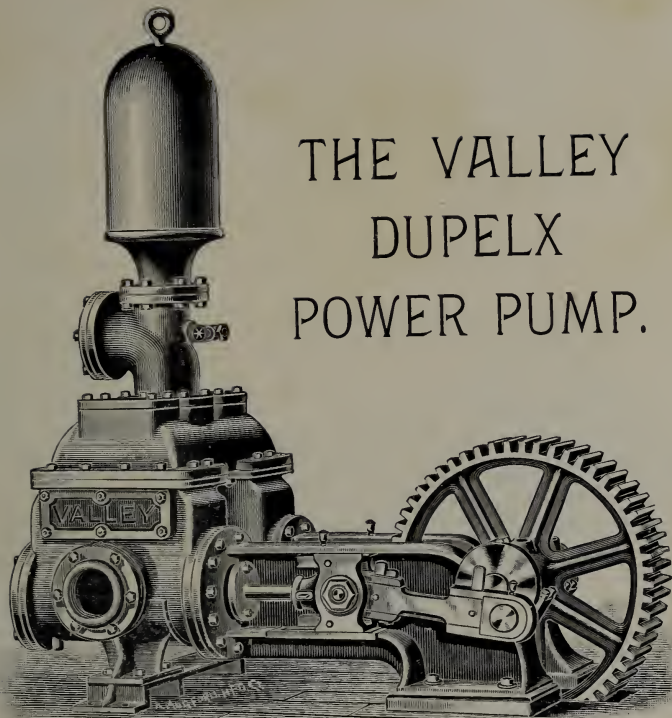
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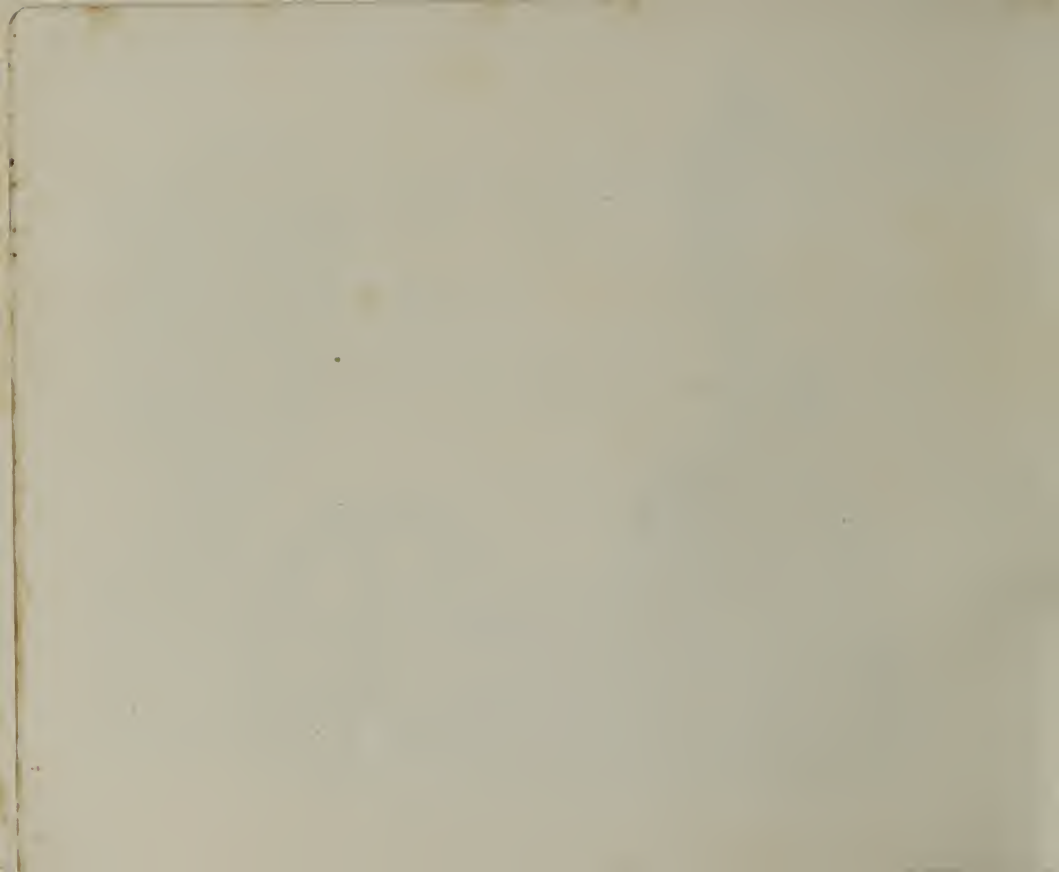
2½ in.	Cylinder, full stroke	7½ in.,	\$100.00
2¾ in.	“	“ 7½ in.,	110.00
3¼ in.	“	“ 7½ in.,	120.00
3½ in.	“	“ 7½ in.,	130.00
3¾ in.	“	“ 7½ in.,	135.00

*Discount,                      per cent.*

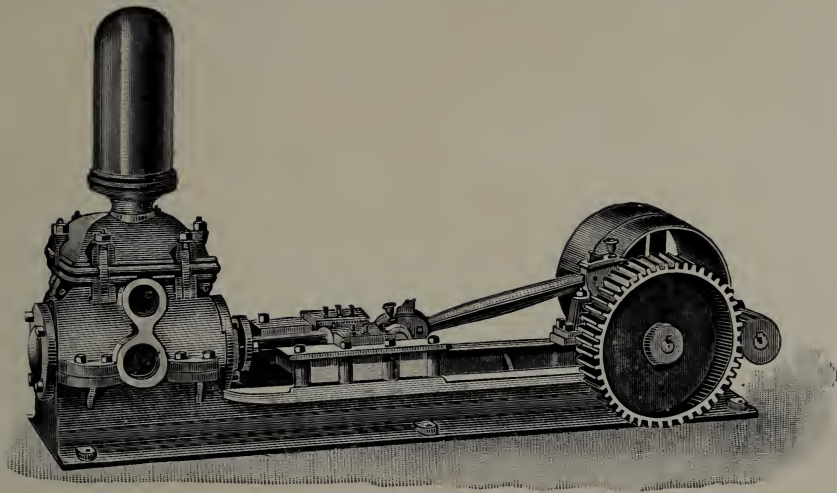


THE VALLEY  
DUPELX  
POWER PUMP.

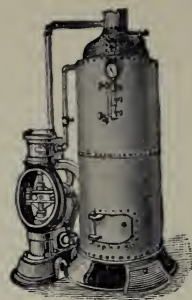
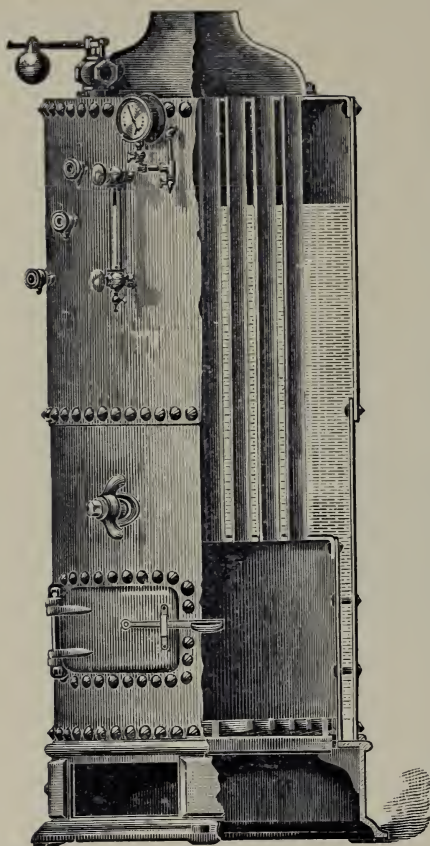




## HORIZONTAL POWER PUMPS.



THESE ARE EXCELLENT MACHINES FOR CERTAIN KINDS OF WORK. WELL MADE,  
STRONG AND DURABLE. PRICES ON APPLICATION.

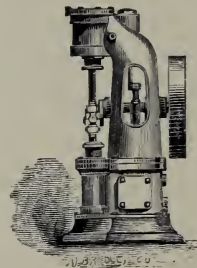


Steam Boilers and Pumps.

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Upright Tubular Boilers,  
 FOR SUPPLYING STEAM TO RUN PUMPS AT R. R.  
 WATER STATIONS, MINES, FIRE  
 PUMPS, HOTELS, &C.

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
Small Steam Pumps.



# Specifications for Upright Tubular Boilers.

LIKE PLATE ON OPPOSITE PAGE.

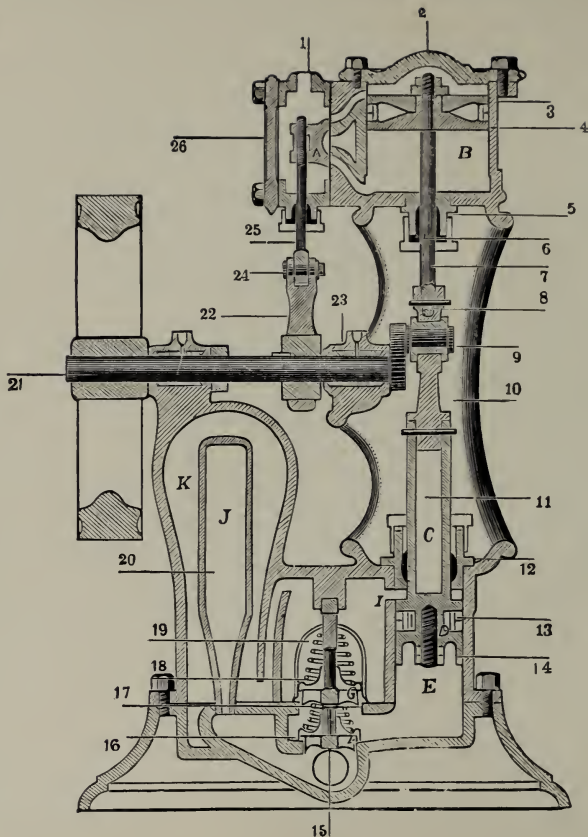
Number of Size,	1	2	3	4	5	6	7	8	9	10	11
Horse Power,	3	5	6	7	8	10	12	15	18	20	25
Diameter of Boiler, inches,	21	24	27	30	30	32	34	36	40	40	44
Height of Boiler, feet,	5	5	5	5	6	6	7	7	7½	7½	8
Diameter of Furnace, inches,	16	19	22	25	25	24	28½	30½	34½	34½	38½
Height of Furnace, inches,	24	24	24	24	24	24	24	24	30	30	30
Thickness of Shell,	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	5-16	5-16	5-16
Thickness of Furnace,	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	No. 2	No. 2	No. 2
Thickness of Heads,	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	51	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
Number of 2 inch Tubes,	20	31	39	46	46	48	56	64	74	84	95
Length of Tubes, inches,	36	36	36	36	48	39	54	60	60	60	66
Diameter of Bottom of Base, in.,	27	31	35	37	37	13	41	43	47	47	50
Height of Base, inches,	11	11	13	13	13	12	13	13	13	13	13
Height of Bonnet, inches,	8	9	10	11	11	11	13	13	13	13	16
Diam. Smoke Stack required, in.	7	8	9	10	10	11	12	14	16	16	17
	\$140	\$160	\$180	\$200	\$215	\$235	\$260	\$285	\$330	\$340	\$410

 The above Prices include all fixtures complete except Smoke Stack.

*Write for discounts on Boilers.*

# Bucket Plunger Steam Pump.

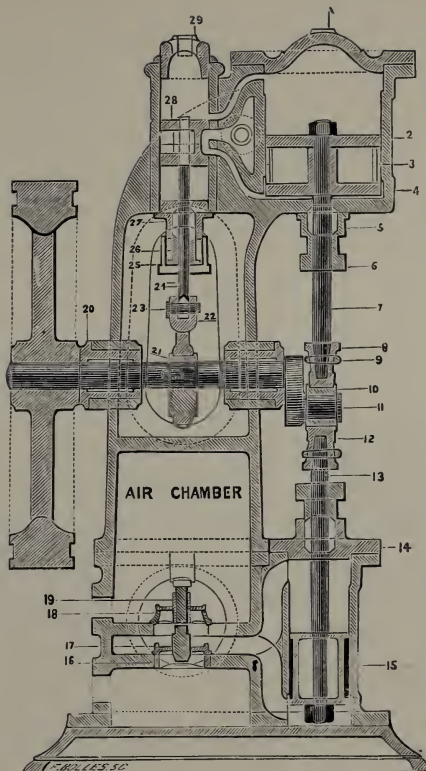
- 1 Steam Chest.
- 2 Cylinder Head.
- 3 Piston Follower.
- 4 " Head.
- 5 " Rod Stuffing Box.
- 6 " Rod Stuff'g Box Nut.
- 7 " Rod.
- 8 Upper Yoke.
- 9 Slide Box.
- 10 Lower Yoke.
- 11 Plunger.
- 12 " Stuffing Box.
- 13 " Rings.
- 14 " Follower.
- 15 Suction Valve Seat.
- 16 " Valve.
- 17 Discharge Valve Seat.
- 18 " Valve.
- 19 " Valve Cage.
- 20 Vacuum Chamber.
- 21 Crank Shaft.
- 22 Eccentric Strap.
- 23 Crank Shaft Cap.
- 24 Valve Stem Pin.
- 25 Valve Stem.
- 26 Steam Chest Cover.



*Refer to this List when ordering Repairs.*

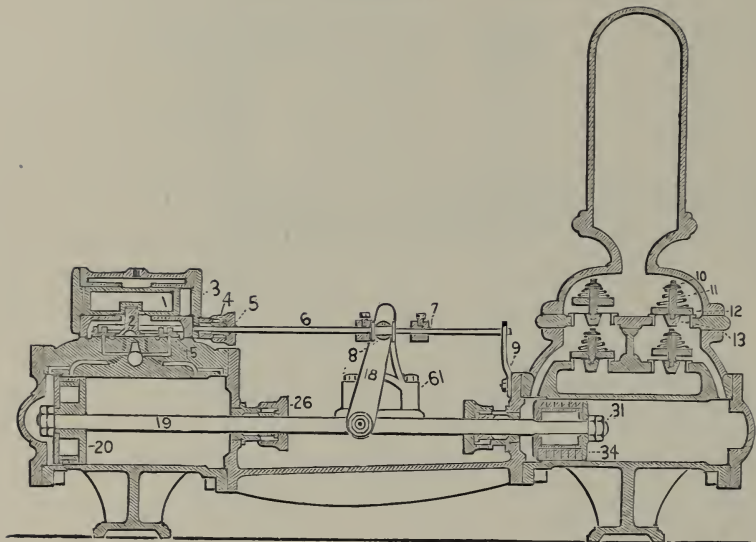
# ACME STEAM PUMP.

- 1 Cylinder Head.
- 2 Piston Follower.
- 3 " Rings.
- 4 " Head.
- 5 " Stuffing Box.
- 6 " Stuffing Box Gland.
- 7 " Rod.
- 8 Upper Yoke.
- 9 Yoke Pin.
- 10 Slide Box.
- 11 Crank Pin.
- 12 Lower Yoke.
- 13 Plunger Rod.
- 14 Water Cylinder Head.
- 15 Water Plunger.
- 16 Lower Valve Seat.
- 17 Lower Valve.
- 18 Upper Valve Seat.
- 19 Upper Valve.
- 20 Shaft Box.
- 21 Eccentric.
- 22 Eccentric Strap.
- 23 Valve Stem Pin.
- 24 Valve Stem.
- 25 " " S. Box Nut.
- 26 " " S. Box Gland.
- 27 " " Stuffing Box.
- 28 Steam Valve.
- 29 Valve Chest Nut.



*Refer to this List when ordering Repairs.*

# PARTS OF IMPROVED VALLEY PUMP.

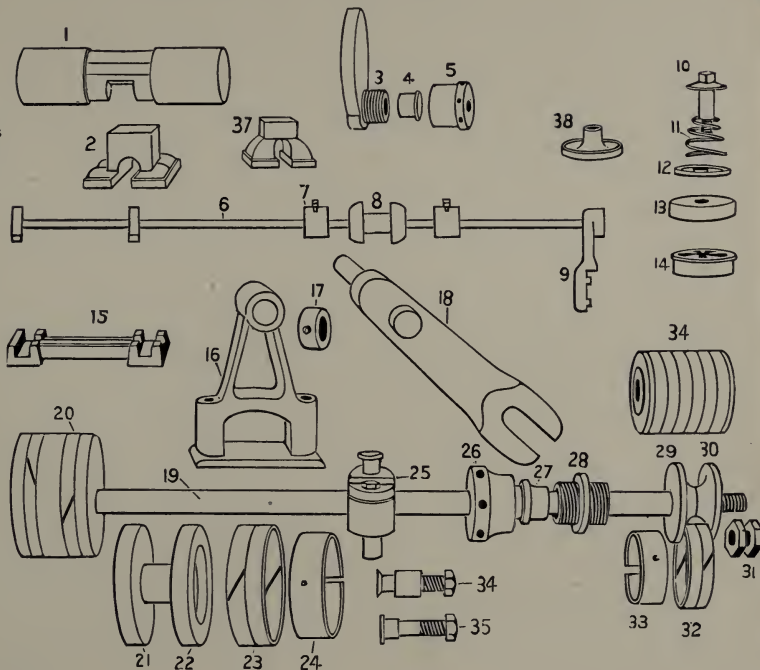


- 1-Steam valve piston.
- 2-Steam valve, B pattern.
- 3-Steam chest cylinder head.
- 4- " " " " gland
- 5- " " " " nut.
- 6-Valve rod.
- 7- " " tappett.
- 8- " " spool.
- 9- " " guice.
- 10-Water valve bolt.
- 11- " " spring
- 12-Rubber valve spring plate.
- 13-Rubber valve.
- 14-Valve seat.
- 15-Auxiliary steam valve.
- 16-Valve lever stand.
- 17- " " collar.
- 18-Valve lever.
- 19-Piston rod.

Refer to this list when ordering repairs

# PARTS OF IMPROVED VALVEY PUMP.

- 20-Grooved and ringed steam piston,
- 21-Three ring steam piston head,
- 22- " " " follower,
- 23- " " " outside rings
- 24- " " " inside rings
- 25-Piston rod cross head,
- 26-Piston rod stuff box nut,
- 27- " " " gland,
- 28- " " " box,
- 29-Water piston head,
- 30 " " " follower,
- 31 " " " lock nuts,
- 32 " " " rings,
- 33 " " " inside rings,
- 34-Fibrous Water Piston,
- 35-Hand lever bolt,
- 36-Valve lever bolt,
- 37-Steam valve, D pattern,
- 38-Metal water valve.



Refer to this list when ordering repairs.

## USEFUL INFORMATION. DIRECTIONS FOR CONNECTING PUMPS.

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The pipe should never be of less diameter than given in the table. In long pipes this should be increased to allow for increased friction, especially in suction pipes.

The bends and valves in the pipes should be few as possible, as they greatly increase the friction, and consequently retard the flow of the liquid. This is important, as no Pump can work satisfactorily that does not have a full supply of water.

Pumps should always be drained in cold weather, as freezing of water in pipes or cylinders is sure to burst them.

Water at high temperature can not be raised any considerable distance by suction, as the vapor discharged by the water so heated follows the receding pistons of the Pump, and resists the entrance of the water; consequently to pump hot water, always place the supply above the Pump, so that it will be supplied from a head.

An air chamber upon the suction pipe, close to the Pump, is always an advantage, and on long lines of suction pipe, or on Pumps running at a high rate of speed, is absolutely necessary. Their utility consists in causing a steady and uniform flow of the fluid through the suction pipe, and thus preventing "pounding" or "water hammer," which is always incident to long suction.

Where it is practicable, make bends with a large radius, and put a foot valve and strainer on the end of the suction pipe. Do not place the Pump more than twenty-nine feet above the water. Make all joints in the suction pipe tight. A small leak in the suction is very detrimental. Keep the stuffing boxes nicely packed.

Oil the Pump before starting it, and keep the oil wiped off where it is not needed. Some engineers seem to think that if their boilers are supplied with water there is no need of looking after the Pump or taking any care of it. A good Pump is as worthy of being taken care of as a good engine, and we suggest to all engineers and persons using or having charge of Pumps, that they spend a few moments every day in cleaning them up, removing all extra oil on them, wiping off the dust and dirt, and seeing that they are in good condition and working well.

EFFICIENCY OF STEAM PUMPS AS COMPARED WITH INJECTORS.—BY D. S. JACOBUS, M. E.

Temperature of feed water as delivered to the Pump or to the Injector, 60 deg. Fahr. Rate of evaporation of Boiler 10 pounds of water per pound of coal from and at 212 deg. Fahr.

METHOD OF SUPPLYING FEED WATER TO BOILERS.	Relative amount of Coal required per unit of time, the amt. for a direct acting Pump feeding water at 60 deg. without a heater being taken as a unity.	Saving of Fuel in per ct. of amt used by direct acting Pump without heater.
Direct acting Pump, feeding water at 60 deg. without a heater.	1.000	.0 “
Injector, feeding water at 150 deg. without a heater.	.985	1.5 per ct.
Injector, feeding water through a heater in which it is heated from 150 to 200 degrees,	.938	6.2 “
Direct acting Pump, feeding water through a heater, in which it is heated from 60 to 200 degrees,	.879	12.1 “
Geared Pump, run from the engine, feeding water through a heater, in which it is heated from 60 to 200 degrees,	.868	13.2 “



# Table Showing Discharge of Jets Under Different Heads.

COMPUTED FROM BOX'S HYDRAULICS.

Head in Feet	Pressure per square Inch.	DIAMETER OF ORIFICES IN INCHES.							
		$\frac{1}{8}$ in.	$\frac{1}{4}$ in.	$\frac{1}{2}$ in.	$\frac{3}{4}$ in.	1 in.	$1\frac{1}{4}$ in.	$1\frac{1}{2}$ in.	2 in.
		GALLONS DISCHARGED PER MINUTE.							
40	17.32	1.8	7.3	29.2	65.5	116.5	182.0	262.0	465.0
60	25.99	2.2	8.9	35.6	80.3	143.0	223.0	320.0	571.0
80	34.65	2.6	10.3	41.1	92.6	164.0	258.0	371.0	659.0
100	43.31	2.9	11.5	46.1	103.7	183.6	288.0	415.0	738.0
120	51.98	3.1	12.6	50.4	113.5	201.6	315.0	454.0	807.0
140	60.64	3.4	13.5	54.5	122.0	217.0	341.0	491.0	872.0
160	69.31	3.6	14.4	58.3	131.0	233.0	365.0	526.0	932.0
180	77.97	3.8	15.2	61.8	138.6	246.0	387.0	558.0	989.0
200	86.63	4.1	16.3	65.1	146.5	260.0	407.0	586.0	1,042
220	95.30	4.3	17.1	68.3	154.0	274.0	427.0	616.0	1,093
240	103.96	4.5	17.8	71.0	160.5	285.5	446.0	643.0	1,142
260	112.62	4.7	18.5	73.9	167.0	297.0	464.0	669.0	1,188
280	121.29	4.9	19.2	76.7	173.3	308.0	481.5	694.0	1,233
300	129.95	5.0	19.9	79.7	179.3	319.0	498.0	718.0	1,275



# Table Showing Height of Streams Under Different Heads

FROM BOX'S HYDRAULICS.

Head in Feet	Pressure per square Inch.	DIAMETER OF NOZZLE IN INCHES.							
		$\frac{1}{8}$ in.	$\frac{1}{4}$ in.	$\frac{1}{2}$ in.	$\frac{3}{4}$ in.	1 in.	$1\frac{1}{4}$ in.	$1\frac{1}{2}$ in.	2 in.
		HEIGHT OF STREAM IN FEET.							
40	17.32	20.0	30.0	35.0	37.0	37.5	38.0	38.3	38.7
60	25.99		37.5	48.7	52.0	54.4	55.0	56.2	57.0
80	34.65		40.0	60.0	67.0	70.0	72.0	73.3	75.0
100	43.31			69.0	79.0	84.0	87.0	90.0	92.0
120	51.98			75.0	90.0	97.0	102.0	105.0	109.0
140	60.64			79.0	99.0	109.0	116.0	120.0	125.0
160	69.31			80.0	106.0	120.0	128.0	133.0	140.0
180	77.97				112.0	129.0	139.0	141.0	155.0
200	86.63				116.0	137.0	150.0	158.0	169.0
220	95.30				119.0	145.0	159.0	165.0	182.0
240	103.96				120.0	150.0	168.0	180.0	195.0
260	112.62					155.0	175.0	190.0	208.0
280	121.29					158.0	182.0	198.0	219.0
300	129.95					160.0	187.0	206.0	230.0

The "Valley Pump" works splendidly. L. SILE, Asbury Park, N. J.

We are pleased with the Valley Pump. It does our work very nicely.

J. H. BUCKLEY & SON, Norwalk, Conn.

I am much pleased with the Valley Pump. WM. RITTER, Chicopee, Mass.

The No. 3 Valley gives ENTIRE SATISFACTION. RICHARD MELLETT, Mobile, Ala.

We have used your Pumps several years, and they give good satisfaction.

THE HOYT BROS CO., New Haven, Conn.

Have used your Bucket Plunger Pump as Pump and Engine the past two years, and it does all the work required very satisfactorily.

CHAS. F. KERILL, Rensselaer Falls, N. Y.

We consider the Acme Pump we purchased from you a very superior Pump for our purpose.

HARTFORD CARPET CO., Thompsonville, Conn.

The No. 4 Bucket Plunger Pump we had from you gives first-class satisfaction.

MANN BROS, Milwaukee, Wis.

The two No. 9 Bucket Plunger Pumps we have as Fire Pumps, have proved excellent machines at the burning of a neighboring mill.

CRESCENT MILLS, Fall River, Mass.

We have two Bucket Plunger Pumps in use, and like them very much.

CASTINE PACKING CO., Castine, Me.

The Valley Pump has given entire satisfaction. CHARLESTON IRON WORKS, Charleston, S. C.

The No. 3 Valley Pump works nicely, and to my satisfaction. E. LEVASSEUR, North Lyndon, Me.

The No. 5 Bucket Plunger Pump gives good satisfaction in every respect.

W. H. COLEMAN, Engineer Treasury Building, Washington, D. C.

We are much pleased with the Pump you built for the House.

J. THOMAS MILLER, Engineer House of Representatives, Washington, D. C.

The Valley Pump put into our works eight years ago is still working to our entire satisfaction, never having caused us the least trouble.

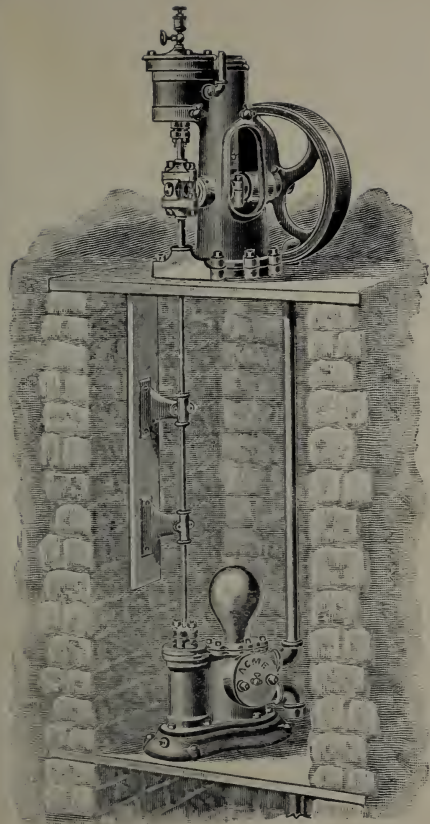
EASTHAMPTON RUBBER THREAD CO., Easthampton, Mass.

The No. 5 Valley Boiler Feed Pump you sold us six years ago has always done its work satisfactorily.

WILLISTON MILLS, Easthampton, Mass.

Your Bucket Plunger Steam Pumps are simply perfection.

LIVERMORE FOUNDRY AND MACHINE CO., Memphis, Tenn.



**ACME**

**Steam Pump**

**for**

**Deep Wells.**



## USEFUL INFORMATION.

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Best designed boilers, well set, with good draft and skillful firing, will evaporate from 7 to 10 lbs. of water per pound of first-class coal. The average result is from 30 to 60 per cent. below this.

In calculating horse-power of tubular or flue boilers, consider 15 square feet of heating surface equivalent to one *nominal* horse-power. One square foot of grate will consume on an average 12 lbs. of coal per hour.

Steam Engines, in economy, vary from 30 to 60 lbs. of feed water and from 2 to 7 lbs. of coal per indicated h. p.

To compute the horse-power of leather belting, single thickness running on smooth iron pulleys, multiply the square feet which passes a given point in a minute. If a belt is 12 in. wide every foot of movement gives a foot of surface. If 6 in. wide two foot of movement gives a foot of surface and so on.

Allow 80 feet for one horse-power, thus, a belt 3 in. wide must run 16 ft. to present one foot of surface, and to furnish one horse-power it must run 16 times 80 or 1280 feet a minute.





BUCKET PLUNGER PUMP USED AS AN ENGINE.



